APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,124	03/15/2004	Timothy N. Jones	018563-006010US	3509

46718	7590	12/27/2005

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EXAMINER
WILSON, JOHN J

ART UNIT	PAPER NUMBER
3732	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/802,124	JONES ET AL.
	Examiner	Art Unit	
	John J. Wilson	3732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>16 November 2005</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>68-94</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>68-94</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/14/05</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 68-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Wu et al (5338198) in view of Yoon et al (5742700). Wu shows scanning and receiving

a data set, finding a component and creating a model of the component using

segmentation, column 7, lines 7-10. During the building of a digital model the data, the

computer automatically applies tests to the incoming data to build the digital model

including segmenting components, as an example see column 8, lines 6-15 of Wu.

Yoon teaches that it is known to segment by boundary points, Fig. 3, including both

automatic and manual segmentation. It would be obvious to one of ordinary skill in the

art to modify Wu to include segmenting components using boundary segmentation as

taught by Yoon in order to better manipulate the desired regions. Yoon further teaches

finding points at the interproximal margins between teeth, Fig. 4, in order to obtain data

about the points within the tooth. It would be further obvious to one of ordinary skill in

the art to modify Wu to include finding interproximal points as shown by Yoon in order to

determine properties of the tooth. To use these points as the boundary points as taught

by Wu would be obvious to one of ordinary skill in the art in the choice of the specific

boundary of known boundary points used to one of ordinary skill in the art. Finding

points outside a component and then finding the boundary points is merely obtaining an

image by first finding its negative which would have been obvious to one of ordinary skill

in the art in well known ways of finding images. To use well known computer graphic
tools for this manipulation is an obvious matter of choice in the use of known tools for a
known result to one of ordinary skill in the art. That the data can be stored as a 3D
volumetric representation is an obvious matter of choice in known imaging to one of
ordinary skill in the art.

Claims 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Wu et al (5338198) in view of Yoon et al (5742700) and Andreiko et al (5395238). Wu
shows scanning and receiving a data set, finding a component and creating a model of
the component using segmentation, column 7, lines 7-10. During the building of a
digital model the data, the computer automatically applies tests to the incoming data to
build the digital model including segmenting components, as an example see column 8,
lines 6-15 of Wu. Yoon teaches that it is known to segment by boundary points, Fig. 3,
including both automatic and manual segmentation. It would be obvious to one of
ordinary skill in the art to modify Wu to include segmenting components using boundary
segmentation as taught by Yoon in order to better manipulate the desired regions. The
prior art teaches finding a component and determining the data points that belong to
that component. Finding points outside a component and then finding the boundary
points is merely obtaining an image by first finding its negative which would have been
obvious to one of ordinary skill in the art in well known ways of finding images. The
above combination does not show using gingival regions as the negative regions used
to find a component. Andreiko teaches that it is known the find gum intersections of a
digital model. It would be obvious to one of ordinary skill in the art to modify the above
combination to include determining these regions as shown by Andreiko in order to
make use of a known regions that delineate the desired component. The specific

mathematical algorithm used to find the desired portion is an obvious matter of choice in known algorithms for segmentation of data to one of ordinary skill in the art.

Terminal Disclaimer

The terminal disclaimer filed on October 14, 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on SN 09/264,547 has been reviewed and is accepted. The terminal disclaimer has been recorded.
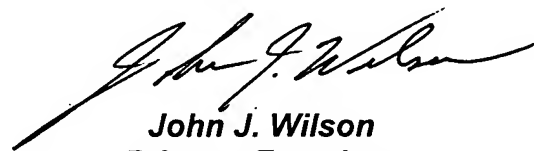
Response to Arguments

Applicant's arguments filed November 16, 2005 have been fully considered but they are not persuasive. Yoon does show using the interproximal region in Fig. 4, and therefore, teaches it is known to use these boundary points in computer calculations for determining information about the tooth. Andreiko teaches using the gum intersection boundary in computer calculations. To use these boundary points in the teaching of Wu would have been suggested to the skilled artisan.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Wilson whose telephone number is 571-272-4722). The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kevin P. Shaver, can be reached at 571-272-4720. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

John J. Wilson
Primary Examiner
Art Unit 3732

jjw
December 5, 2005